

T1-00003

**Application Number:** T1-00003

**Scientific Score:** 91

**Title:** Interdisciplinary Stem Cell Training Program at [REDACTED]

*Specific names of individuals and institutions are blacked out to preserve applicant confidentiality where possible.*

### **Proposal Abstract as Submitted by Applicant**

This proposal describes a Type I stem cell training program at [REDACTED] including the [REDACTED] School of Medicine, the [REDACTED] Division of Biology, [REDACTED] School of Pharmaceutical Sciences, and [REDACTED] School of Engineering. This program is designed to provide interdisciplinary training in stem cell biology and medicine by taking advantage of the unique interdisciplinary and inter-institutional environment at [REDACTED]. A major goal is to train a cadre of young basic and clinical scientists and engineers in the use of quantitative and engineering approaches from the physical sciences such as chemistry, computation, and materials science to make novel discoveries in basic and clinical biomedicine. Basic and clinical science and engineering trainees who complete our program will be ideally suited for future careers as academic or industrial scientists investigating stem cell biology and medicine, or using stem cell based methods to develop new therapeutic approaches to human diseases. Our approach will be to build on each trainee's specialized foundation of basic or clinical knowledge and provide: 1) Rigorous education in the principles and applications of embryonic and adult stem cell biology from humans and model organisms; 2) Research training in physical, computational, and engineering methods that can be used to harness stem cells to attack problems of basic and clinical science and their uses to develop new understanding and new therapies; and 3) Education in the problems and outlooks associated with the ethical, legal, social, and economic issues associated with stem cell biology. Our training program will also serve as a catalyst for the integration of our expanding stem cell biology research and training efforts at [REDACTED] and [REDACTED]. Thus, we are requesting financial support for 16 trainees (6 graduate, 4 postdoctoral, 6 clinical fellow).

### **Benefit of this Program to California**

This program will benefit the people and the state of California by providing high-quality training in the scientific, clinical, social, and ethical aspects of stem cell research to the scientists and clinicians who will develop and apply future therapies in this rapidly emerging field.

### **Summary of Review**

This application proposes a comprehensive type I program with a focus on human embryonic stem-cell research. The formal education is broad and comprehensive, across four collaborating institutions, and includes new courses in stem-cell biology and research ethics, a monthly colloquium, and a yearly retreat. In addition, there is an intensive 3-week training course in laboratory methods followed by a short 2-3 day course as needed to provide additional skills. Overall, the program is well thought out with excellent integration of the components, including courses and mentoring. It is also unique in its plan to integrate stem cell biology with computational and physical sciences.

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However, the integration of the basic research and medical application for the treatment of disease is not the strongest aspect of this program. The program director has experience in research, mentoring, and administration. He has served as director of the graduate Genetics Training Program and as co-director on an NCI training program. The program director and a steering committee, made up of members from each of six participating departments, will meet with each trainee on a yearly basis to plan an individualized program and address long-range plans. Additionally, each trainee will have a 5-member advisory committee. The faculty has excellent funding and training records, speaking well for the likelihood of well-run programs. Additionally, the institution has made commitments to new faculty recruitments as well as dedicating 3,000 sq. ft. of space to hESC activities. The existing training programs are nationally and internationally renowned, and draw a very good applicant pool. There is an excellent likelihood of drawing in minority students with existing programs at this and a collaborating institution.

### **Overall Strengths and Weaknesses**

The proposed program is excellent to outstanding. This is an excellent training facility with world-class leaders in stem cell biology. It draws from a high quality pool of applicants in both basic research and clinical areas. Strength arises from the interdisciplinary and inter-institutional nature of the program. However, courses (particularly the required course in ethics, legal, and social issues) are not well planned or articulated.

### **Recommendations**

Highly meritorious and recommended for funding.

	Pre	Post	Clinical	Total
Fellows Requested:	6	4	6	16
Fellows Recommended:	6	4	6	16

	Year 1	Total
Budget Requested:	\$ 1,227,783	\$ 3,683,349
Budget Recommended:	\$ 1,227,783	\$ 3,683,349